

CLAIMS

(AMENDMENTS under article 34)

1. An optical recording medium comprising: a plurality of grooves concentrically or spirally arranged from a radially inner periphery toward a radially outer periphery of the medium, a plurality lands each disposed between two of said grooves adjacent to each other in a radial direction of the medium, a plurality of recording tracks each disposed in said groove and/or said land, and a plurality of prepit forming regions disposed in said groove and/or said land and each capable of receiving therein a single or a plurality of prepits:

said plurality of prepit forming regions are disposed apart from one another by a distance which is 300 or more times a recording channel bit length:

each of said prepit forming regions having a fixed length which is 36 or less times said recording channel bit length along said groove or land, said prepit forming regions having a fixed length which is three or less tracks long along said radial direction and being disposed not adjacent to one another in said radial direction.

2. The optical recording medium according to claim 1, wherein said recording track and said prepit forming region are disposed in each of said groove and said land.

3. The optical recording medium according to claim 1 or 2, wherein said medium includes a plurality of zones divided in said radial direction, and said prepit forming regions in each of said zones are arranged, in alignment with one another in said radial direction,
5 at a cycle corresponding to a specified number of recording tracks, along a plurality of lines which divide said medium by an integer in a circumferential direction of said medium.
4. The optical recording medium according to any one of claims 1 to 3, wherein said medium includes said plurality of zones divided in said radial direction, and said wobbles are in-phase with one another.
5. The optical recording medium according to any one of claims 1 to 4, wherein said prepits in said prepit forming region are formed by deforming groove side walls.
6. The optical recording medium according to any one of claims 1 to 4, wherein said prepits in said prepit forming region are formed by disconnection of said grooves.
7. The optical recording medium according to any one of claims 1 to 4, wherein said prepit in said prepit forming region is formed as an emboss provided on said land.

8. The optical recording medium according to any one of claims 1 to 7, wherein said prepit forming region is provided, in number of one at most for each frame forming a unit of data arranged on said recording track, at a specified position of said each frame

9. The optical recording medium according to claim 8, wherein the number of frames per said recording track is an integer, and said prepit forming regions are intermittently disposed in said frames so that one of two of said recording tracks formed on respective said
5 lands sandwiching therebetween one of said grooves, or formed on respective said grooves sandwiching therebetween one of said lands, includes therein said prepit forming region in one of said frames, whereas the other of said two of said recording tracks includes therein no prepit forming region in said one of said frames.

10. The optical recording medium according to claim 8 or 9, wherein said recording track has a wobble cycle equal to $1/n$ of a frame cycle.

11. The optical recording is according to any one of claims 1 to 10, wherein a prepit array including at least one prepit and formed in said prepit forming region is recorded so as to provide part of physical address information or subsidiary information of said
5 medium.

12. The optical recording medium according to any one of claims 4 to 11, wherein a single prepit is formed in each said prepit forming region, and is recorded so as to provide part of physical address information or subsidiary information of said medium based on a relative relationship between the wobble phase and the prepit position.

13. A method for recording data on the optical recording medium according to any one of claims 1 to 12, said method comprising the step of recording a pattern including a long mark or a long space having ten or more times said channel bit length so that said prepit on said recording track is covered with said long mark or long space on said prepit forming region.

14. A method for recording data on the optical recording medium according to any one of claims 1 to 12, said method comprising the step of recording a pattern including a long mark or a long space having ten or more times said channel bit length so that said prepit on one of said recording tracks is covered with said long mark or long space and so that said prepit on another of said recording tracks adjacent to said one of said recording tracks is covered with said long mark or long space.

15. A method for recording data on the optical recording medium according to claim 3, said method comprising the step of covering

said prepit on one of said recording tracks with said long mark or long space, and recording a pattern including a long mark or a long space having ten or more times said channel bit length on an area
5 which is aligned with said prepit forming region in said zone and includes therein no prepit forming region.

16. A recording unit for recording data on the optical recording medium according to any one of claims 1 to 12, said recording unit comprising:

a prepit detecting section for detecting a prepit signal from a
5 signal reproduced from the optical recording medium;

a decoding section for decoding said prepit signal to output physical address information;

a recording pattern generating section for admixing, based on data to be recorded, a recording pattern including a long mark or a
10 long space having a length ten or more times said channel bit length to said data to be recorded, to generate physical address information; and

a recording timing control section for detecting a recorded position based on said physical address information, and controlling
15 timing for start of a recording pattern output from said recording pattern generating section and a channel bit frequency, wherein said recording timing control section controls output timing of said recording pattern so that said long mark or said long space output from said recording pattern generating section covers said

20 prepit.

17. A recording unit for recording data on the optical recording medium according to any one of claims 1 to 12, said recording unit comprising:

5 a wobble detecting section for detecting a wobble phase from a signal reproduced from the optical recording medium;

a prepit detecting section for detecting a prepit signal from a signal reproduced from said optical recording medium;

a decoding section for decoding said prepit signal to output physical address information;

10 a recording pattern generating section for admixing, based on data to be recorded, a recording pattern including a long mark or a long space having a length ten or more times said channel bit length to said data to be recorded, to generate physical address information; and

15 a recording timing control section for detecting a recorded position based on said physical address information, and controlling timing for start of a recording pattern output from said recording pattern generating section and a channel bit frequency, based on said wobble phase output from said prepit detecting section and/or said prepit signal output from said prepit detecting section,

20 wherein said recording timing control section controls output timing of said recording pattern so that said long mark or said long space output from said recording pattern generating section covers said

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prepit.